Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 20.12.2016

14-RFID-Bottom Face-0cm-927.2MHz

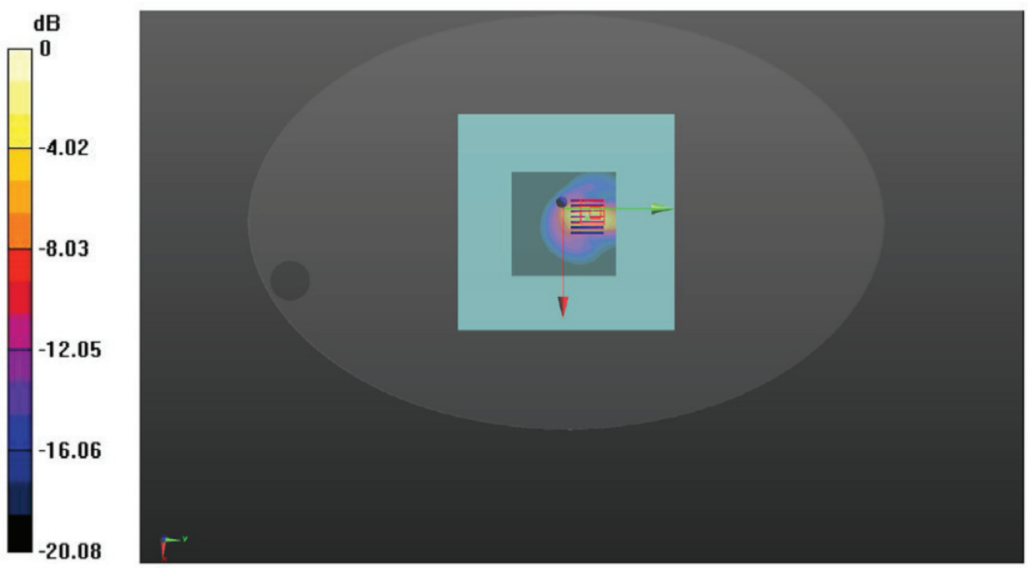
Communication System: UID 0, RFID (0); Frequency: 927.2 MHz;Duty Cycle: 1:1
Medium: MSL_900_1220
Medium parameters used (extrapolated): f = 927.2 MHz; σ = 1.073 S/m; ε_r = 55.042; ρ = 1000kg/m3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch3/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.965 W/kg

Configuration/Ch3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.912 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.609 W/kg; SAR(10 g) = 0.250 W/kg
Maximum value of SAR (measured) = 0.994 W/kg



0 dB = 0.994 W/kg = -0.03 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 17.01.2017

16-RFID-Top face-0cm-927.2MHz

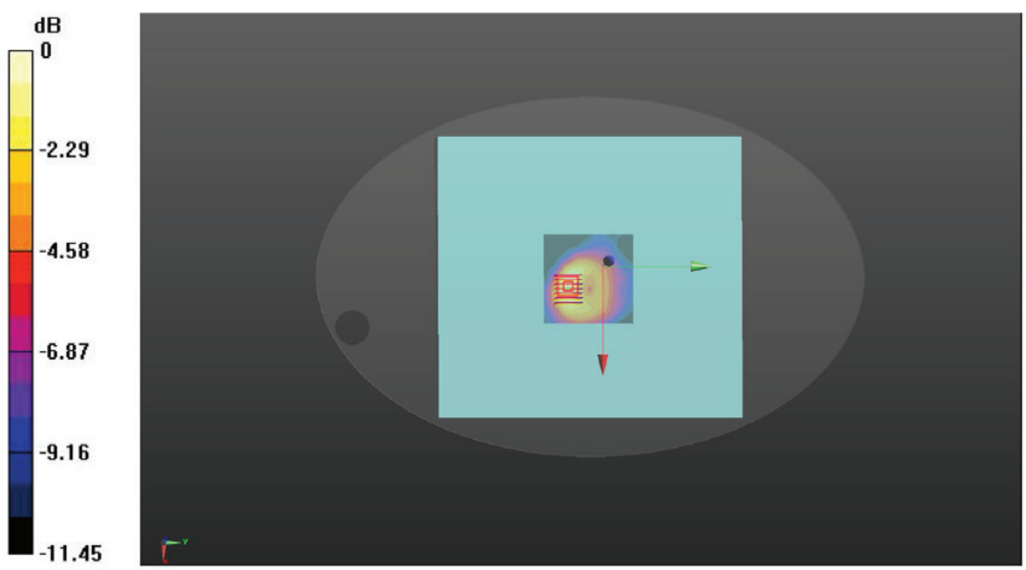
Communication System: UID 0, RFID (0); Frequency: 927.2 MHz;Duty Cycle: 1:1
Medium: MSL_900_0117
Medium parameters used : f = 927.2 MHz; σ = 1.058 S/m; ε_r = 55.086; ρ = 1000 kg/m3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch3/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.0499 W/kg

Configuration/Ch3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.262 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.0600 W/kg
SAR(1 g) = 0.039 W/kg; SAR(10 g) = 0.025 W/kg
Maximum value of SAR (measured) = 0.0493 W/kg



0 dB = 0.0493 W/kg = -13.07 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 20.12.2016

17-RFID-Edge4-0cm-927.2MHz

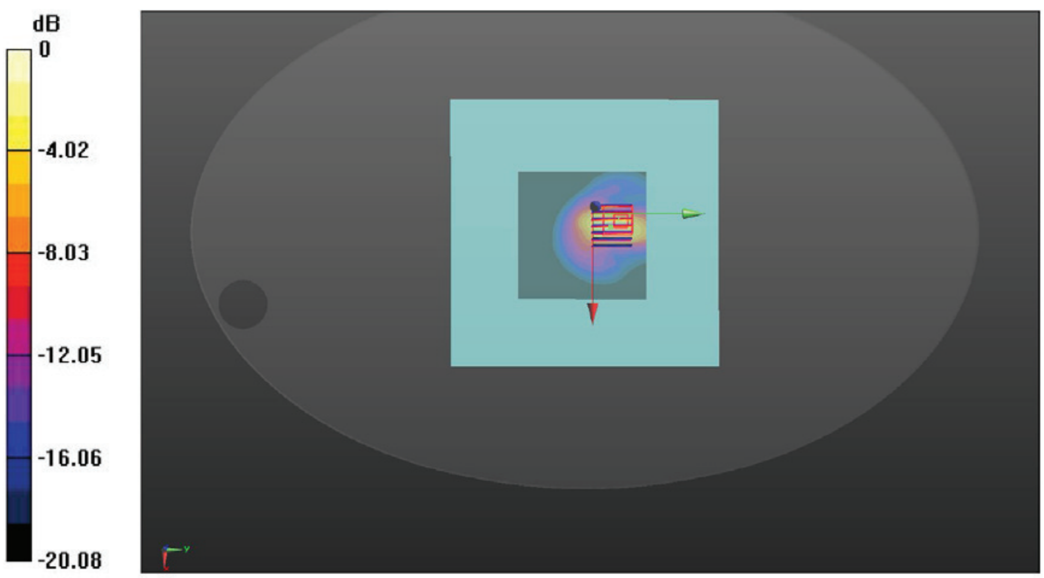
Communication System: UID 0, RFID (0); Frequency: 927.2 MHz;Duty Cycle: 1:1
Medium: MSL_900_1220
Medium parameters used: f = 927.2 MHz; σ = 1.073 S/m; ε_r = 55.042; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch3/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.14 W/kg

Configuration/Ch3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.512 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.95 W/kg
SAR(1 g) = 0.719 W/kg; SAR(10 g) = 0.316 W/kg
Maximum value of SAR (measured) = 1.19 W/kg



0 dB = 0.994 W/kg = -0.03 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 20.12.2016

18-RFID-Edge4-0cm-922.2MHz

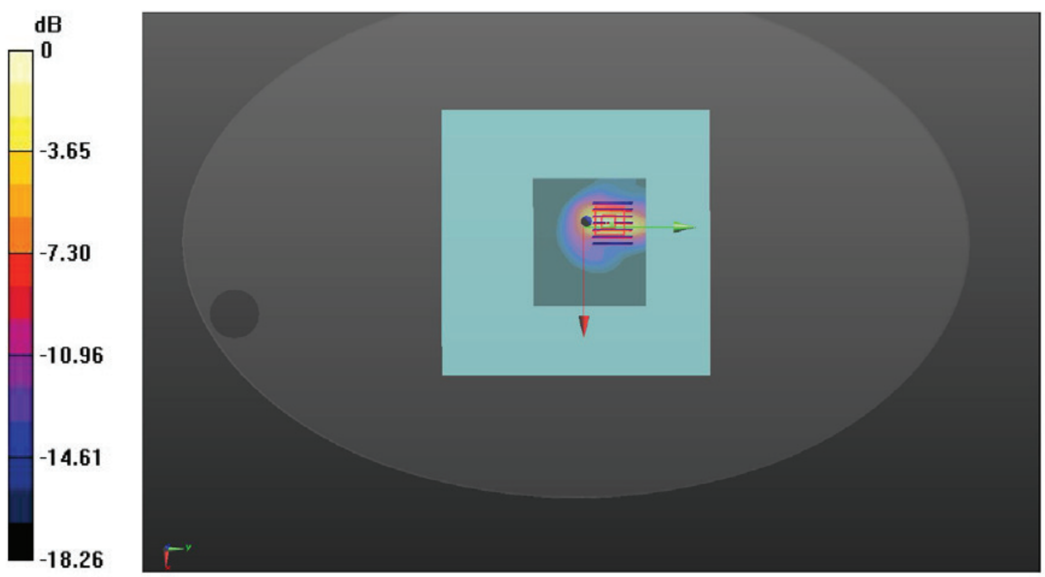
Communication System: UID 0, RFID (0); Frequency: 922.2 MHz;Duty Cycle: 1:1
Medium: MSL_900_1220
Medium parameters used: f = 922.2 MHz; σ = 1.068 S/m; ε_r = 55.085; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch2/Area Scan (81x71x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.05 W/kg

Configuration/Ch2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.303 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.81 W/kg
SAR(1 g) = 0.711 W/kg; SAR(10 g) = 0.300 W/kg
Maximum value of SAR (measured) = 1.14 W/kg



0 dB = 1.14 W/kg = 0.57 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd.

Date/Time: 20.12.2016

19-RFID-Edge4-0cm-917.4MHz

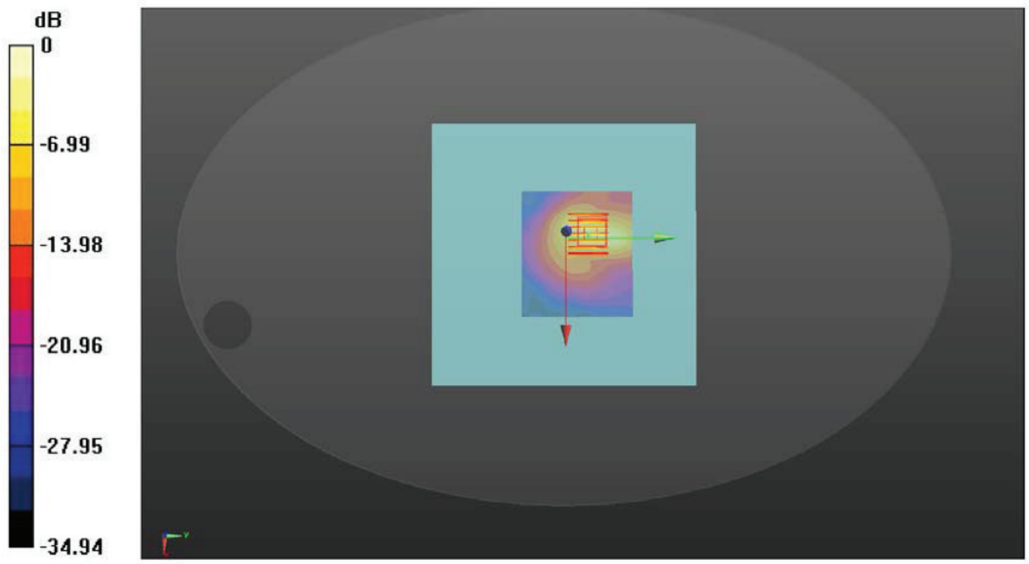
Communication System: UID 0, RFID (0); Frequency: 917.4 MHz;Duty Cycle: 1:1
Medium: MSL_900_1220
Medium parameters used: f = 917.4 MHz; σ = 1.063 S/m; ε_r = 55.128; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch1/Area Scan (81x71x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.09 W/kg

Configuration/Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.992 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.82 W/kg
SAR(1 g) = 0.715 W/kg; SAR(10 g) = 0.298 W/kg
Maximum value of SAR (measured) = 1.20 W/kg



0 dB = 1.20 W/kg = 0.79 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 17.01.2017

21-RFID-Bottom Face-0cm-927.2MHz

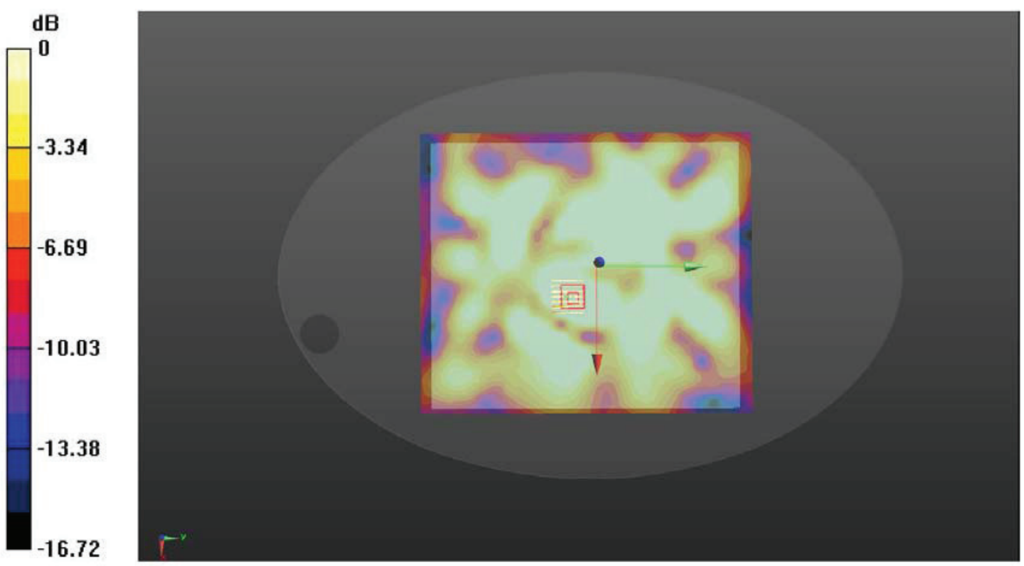
Communication System: UID 0, RFID (0); Frequency: 927.2 MHz;Duty Cycle: 1:1
Medium: MSL_900_0117
Medium parameters used : f = 927.2 MHz; σ = 1.073 S/m; ε_r = 55.042; ρ = 1000 kg/m3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch3/Area Scan (221x261x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.074 W/kg

Configuration/Ch3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.363 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.090 W/kg
SAR(1 g) = 0.027 W/kg; SAR(10 g) = 0.011 W/kg
Maximum value of SAR (measured) = 0.062 W/kg



0 dB = 0.0620 W/kg = -12.08 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 17.01.2017

22-RFID-Top Face-0cm-927.2MHz

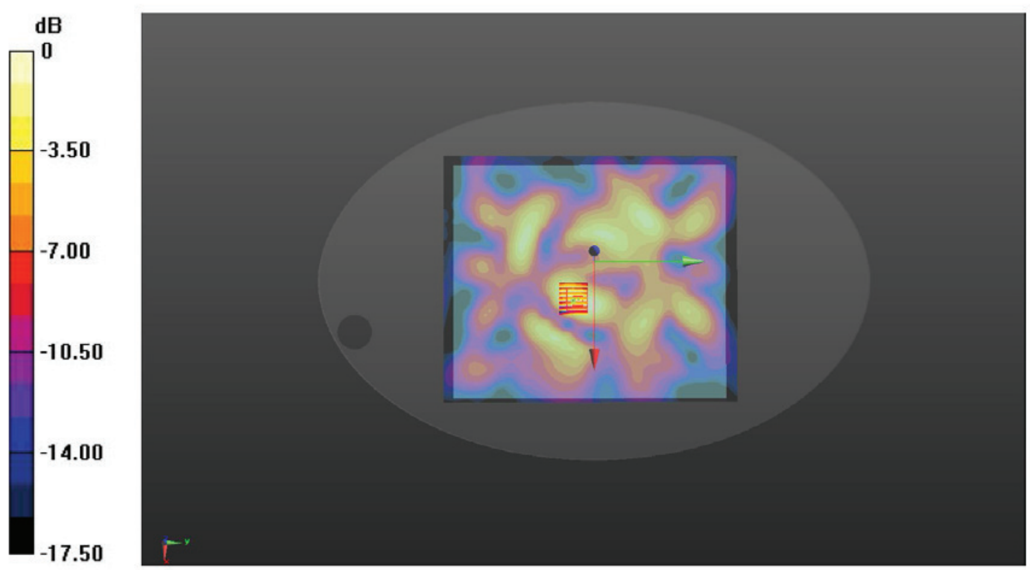
Communication System: UID 0, RFID (0); Frequency: 927.2 MHz;Duty Cycle: 1:1
Medium: MSL_900_0117
Medium parameters used : f = 927.2 MHz; σ = 1.073 S/m; ε_r = 55.042; ρ = 1000 kg/m3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch3/Area Scan (221x261x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.278 W/kg

Configuration/Ch3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.109 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.292 W/kg
SAR(1 g) = 0.218 W/kg; SAR(10 g) = 0.152 W/kg
Maximum value of SAR (measured) = 0.258 W/kg



0 dB = 0.258 W/kg = -5.88 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 17.01.2017

23-RFID-Edge1-0cm-927.2MHz

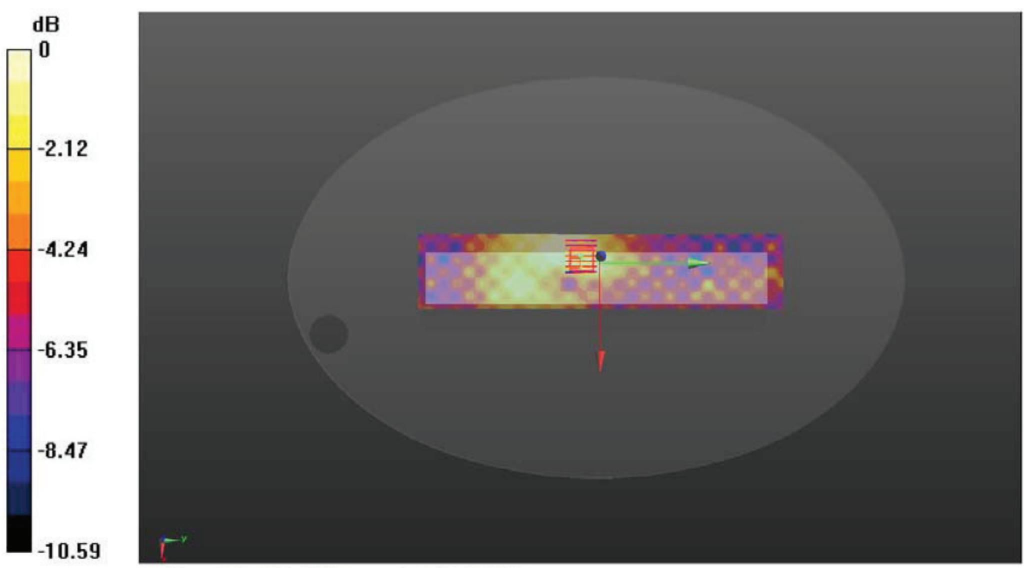
Communication System: UID 0, RFID (0); Frequency: 927.2 MHz;Duty Cycle: 1:1
Medium: MSL_900_0117
Medium parameters used : f = 927.2 MHz; σ = 1.058 S/m; ε_r = 55.086; ρ = 1000 kg/m3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch3/Area Scan (61x291x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.00891 W/kg

Configuration/Ch3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.760 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.00899 W/kg
SAR(1 g) = 0.006 W/kg; SAR(10 g) = 0.00446 W/kg
Maximum value of SAR (measured) = 0.00709 W/kg



0 dB = 0.00709 W/kg = -21.49 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 17.01.2017

26-RFID-Top Face 0cm-922.2MHz

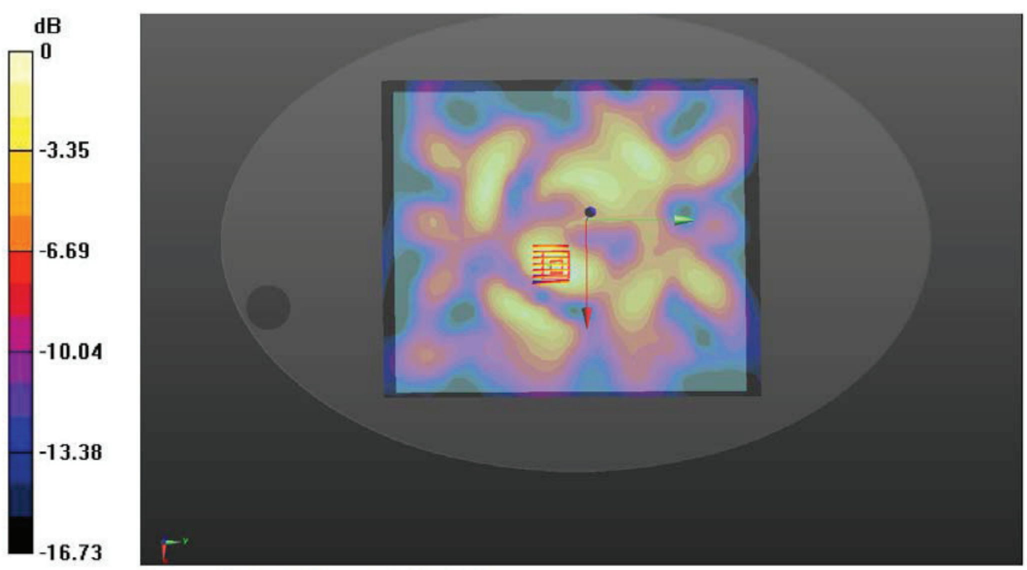
Communication System: UID 0, RFID (0); Frequency: 922.2 MHz;Duty Cycle: 1:1
Medium: MSL_900_0117
Medium parameters used : f = 922.2 MHz; σ = 1.062 S/m; ε_r = 55.094; ρ = 1000 kg/m3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch2/Area Scan (221x261x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.272 W/kg

Configuration/Ch2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.358 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.288 W/kg
SAR(1 g) = 0.217 W/kg; SAR(10 g) = 0.151 W/kg
Maximum value of SAR (measured) = 0.257 W/kg



0 dB = 0.257 W/kg = -5.90 dBW/kg

Test Laboratory: EMTEK (Shenzhen) Co.,Ltd. Date/Time: 17.01.2017

27-RFID-Top Face-0cm-917.4MHz

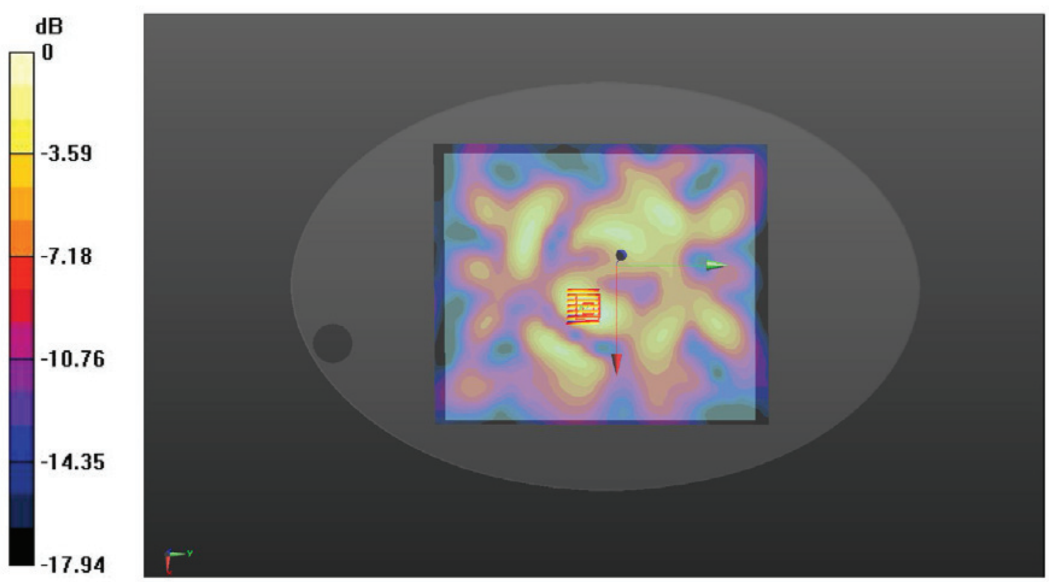
Communication System: UID 0, RFID (0); Frequency: 917.4 MHz;Duty Cycle: 1:1
Medium: MSL_900_0117
Medium parameters used : f = 917.4 MHz; σ = 1.059 S/m; ε_r = 55.137; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(9.90, 9.90, 9.90); Calibrated: 07.09.2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 05.09.2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:1231
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch1/Area Scan (221x261x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.269 W/kg

Configuration/Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.484 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.285 W/kg
SAR(1 g) = 0.215 W/kg; SAR(10 g) = 0.149 W/kg
Maximum value of SAR (measured) = 0.254 W/kg



0 dB = 0.254 W/kg = -5.95 dBW/kg

11.4.5 Simultaneous Transmission Conditions

According to KDB 447498, Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the *reported* standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration

According to the operating description from the manufacturer, the RFID, Bluetooth, WIFI and BLE beacon can transmitter simultaneously. 2GHz WIFI and 5GHz WIFI will not transmit simultaneously.

The maximum reported SAR of RFID is 0.765W/kg

The maximum reported SAR of WIFI is 0.464W/kg

Bluetooth and BLE beacon is qualified for the standalone SAR test exclusion

The estimated SAR vale of Bluetooth is 0.333W/kg

The estimated SAR value of BLE beacon is 0.02W/kg

Sum of SAR value is 0.765+0.464+0.333+0.02 = 1.582 < 1.6W/kg

Therefore, simultaneous SAR test is excluded.

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12 700MHZ TO 3GHZ MEASUREMENT UNCERTAINTY

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangluar	Triangular	U-Shape
Multi-plying Factor[(a)]	$1/K^{(b)}$	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity
(b) K is the coverage factor

Table 12 Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

No.	Description	Type	Uncertainty Value(%)	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6	N	1	1	1	6	6	∞
2	Isotropy	B	3.0	R	$\sqrt{3}$	0.7	0.7	1.2	1.2	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
continue										
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						9.20	9.07	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						18.40	18.14	\

Table 12.1. Uncertainty Budget for frequency range 300 MHz to 3 GHz

No.	Description	Type	Uncertainty Value(%)	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.5	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	3.0	R	$\sqrt{3}$	0.7	0.7	1.2	1.2	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
10	RF ambient conditions-reflection	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
11	Probe positioned mech. restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.6	N	1	1	1	3.6	3.6	5
16	Drift of output power	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.5	N	1	0.64	0.43	1.6	1.1	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	2.5	N	1	0.6	0.49	1.5	1.2	520
continue										
Combined standard uncertainty	$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$							10.23	10.08	256
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$							20.46	20.16	\

Table 12.2. Uncertainty Budget for frequency range 3 GHz to 6 GHz

13 MAIN TEST INSTRUMENTS

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Signal Generator	Agilent	N5181A	MY50145187	2016-5-28	1year
2	RF Power Meter. Dual Channel	BOONTON	4232A	10539	2016-5-28	1year
3	Power Sensor	BOONTON	51011EMC	34236/34238	2016-5-28	1year
4	Wideband Radio Communication Tester	R&S	CMW500	1201.0002K50-140 822zk	2016-5-28	1year
5	Signal Analyzer	Agilent	N9010A	My53470879	2016-5-28	1year
6	Network Analyzer	Agilent	E5071C	MY46316645	2016-5-28	1year
7	E-Field Probe	SPEAG	EX3DV4	3970	2016-9-07	1year
8	DAE	SPEAG	DAE4	1418	2016-9-05	1year
9	Validation Kit 2450MHz	SPEAG	D2450V2	845	2016-10-12	3years
10	Validation Kit 5GHz	SPEAG	D5GHzV2	1180	2016-10-10	3years
11	Validation Kit 900MHz	SPEAG	D900V2	043	2016-6-27	3years
12	Dual Directional Coupler	Agilent	EE393	TW5451008	2016-5-28	1year
13	10dB Attenuator	Mini-Circuits	15542	3 1344	2016-5-28	1year
14	10dB Attenuator	Mini-Circuits	15542	3 1415	2016-5-28	1year
15	30dB Attenuator	Mini-Circuits	15542	3 1420	2016-5-28	1year
16	Power Amplifier	MILMEGA	80RF1000-175	1059345	2016-5-28	1 Year
17	Power Amplifier	MILMEGA	AS0102-55	1018770	2016-5-28	1 Year
18	Power Amplifier	MILMEGA	AS1860-50	1059346	2016-5-28	1 Year
19	Power Meter	Agilent	N1918A	MY54180006	2016-5-28	1 Year
20	Temperature Meter	HEGAO	HTC-1	EE-336	2016-5-28	1 Year
21	ELI V5.0	SPEAG	QD 0VA 022 AA	1231	2016-5-28	N/A
22	Device Holder	SPEAG	N/A	N/A	N/A	N/A

END OF REPORT BODY